

REMARKS

Claims 2-7, 10-13 and 15-31 are pending in this application. By this Amendment, claims 8 and 9 are canceled without prejudice to or disclaimer of the subject matter recited therein. Claims 11 and 12 are amended to incorporate the subject matter recited in canceled claim 8. Claims 30 and 31 are added. No new matter is added.

I. Claim Rejections Under 35 U.S.C. §103

Claims 2-7, 9-12, 15-21, 23-25 and 27-29 are rejected under 35 U.S.C. §103(a) as unpatentable over WO 01/02845 which is the equivalent of U.S. Patent 6,495,027; claims 2-7, 9-12, 15-21, 23-25 and 27-29 are also rejected under WO 01/02845 in view of U.S. Patent 5,877,406 to Kato et al. (hereinafter "Kato '406"). As claim 9 is canceled, the rejection of that claim is moot. Applicants traverse the rejection of claims 2-7, 10-12, 15-21, 23-25 and 27-29.

Claims 8 and 22 are rejected under 35 U.S.C. §103(a) as unpatentable over WO 845 (with or without Kato '406 in view of U.S. Patent 6,045,673 to Kato et al. (hereinafter "Kato '673")). The rejection is respectfully traversed. As the subject matter of claim 8 is incorporated into independent claims 11 and 12, the rejection of claims 8 and 22 will be addressed with the rejection of the independent claims.

Applicants assert that none of the applied references, whether considered alone or in combination, disclose or suggest each and every feature recited in the rejected claims, as amended. For example, the combination of references does not disclose or suggest a gas sensor element, comprising *inter alia* a gas cavity into which gases consisting essentially of oxygen molecules and a specified oxygen containing gas are admitted through a given dispersion resistance ... wherein the gas cavity consists essentially of a first chamber and a second chamber which communicate with each other through a given diffusion resistance,

and wherein the oxygen pump cell is disposed within the first chamber, and the oxygen monitor cell and the sensor cell are disposed within the second chamber.

For the purpose of this Amendment, reference will be made to U.S. Patent 6,495,027 to Stahl (hereinafter "Stahl") which is the English language equivalent of WO 01/02845. The Office Action alleges that Stahl, with or without Kato '406, sets forth all of the features of the claims but does not explicitly disclose an embodiment where the oxygen monitor cell and the sensor cell are in the same second chamber. To overcome the admitted deficiency, the Office Action combines Kato '673 which the Examiner alleges teaches that oxygen monitor cells can be placed in the same measuring chamber as the sensor cell resulting in miniaturization of the sensor cell. In support of the allegation, the Office Action points to col. 25, lines 7-23 of Kato '673. However, col. 25, beginning at line 7, recites "it is unnecessary to provide a new internal space (the third internal space 24 in the first embodiment) for providing the third electrochemical pumping cell 58. Therefore, it is possible to facilitate miniaturization of the entire structure of the gas sensor." Accordingly, the allegation that Kato '673 discloses that the oxygen cell can be placed in the same measuring chamber as the sensor cell resulting in miniaturization of the cell is not disclosed in Kato '673. Rather, Kato '673 merely indicates that the gas sensor may be provided with only first and second internal spaces, rather than three internal spaces which may therefore result in a smaller cell. Thus, there is no suggestion that Kato '673 discloses the teachings as alleged in the Office Action.

Additionally, Kato '673 does not disclose or suggest that the sensor cell and the monitor cell are arrayed substantially in the same position in the direction of flow of the gas by 2 mm or less, as recited in unamended claim 11. The Office Action alleges that such a shift of the electrodes in the direction of the flow of gases is a "mere arrangement of parts" and therefore is obvious. Applicants disagree with this assertion. Rather, having the sensor cell and the monitor cell arrayed as claimed ensures a high accuracy gas concentration

measurement. Therefore, the structural recitation of the gas sensor is not a "mere arrangement of parts".

As neither Stahl nor Kato '673 disclose a gas cavity made up of two chambers as recited in the amended claims, or the structure of the gas sensor recited in unamended claim 11, Applicants submit that the pending claims are in condition for allowance. Thus, Applicants respectfully request the rejection of claims 2-7, 9-12, 15-21, 23-25 and 27-29, as well as the rejection claims 8 and 22 be withdrawn.

Furthermore, neither Stahl nor Kato '673 disclose a gas sensor element wherein an interval between a line about which the second monitor cell electrode of the oxygen monitor cell and the second sensor cell electrode of the sensor cell are arranged to be axi-symmetric in a longitudinal center line of a gas path formed upstream of the second monitor cell and the second sensor cell within the gas cavity is 1 mm or less. The Office Action alleges that this structural feature is also a "mere arrangement of parts". However, as this structural feature improves the measurement accuracy of the sensor, Applicants submit that the structural arrangement is not a "mere arrangement of parts".

Claims 13 and 26 are rejected under 35 U.S.C. §103(a) as unpatentable over Stahl in view of U.S. Patent 6,332,965 to Sugiyama et al. (hereinafter "Sugiyama"); and claims 15 and 27 are rejected under 35 U.S.C. §103(a) as unpatentable over Stahl, with or without Kato '406, in view of U.S. Patent 4,283,261 to Maurer et al. (hereinafter "Maurer"). The rejections are respectfully traversed.

Applicants assert that claims 13, 15, 26 and 27 are allowable for their dependency on their respective base claims, as well as for the additional features recited therein.

Furthermore, neither Sugiyama nor Maurer overcome the deficiencies of Stahl or Kato '673 described above. Accordingly, Applicants respectfully request the rejection of claims 13, 15, 26 and 27 under 35 U.S.C. §103(a) be withdrawn.

II. New Claims

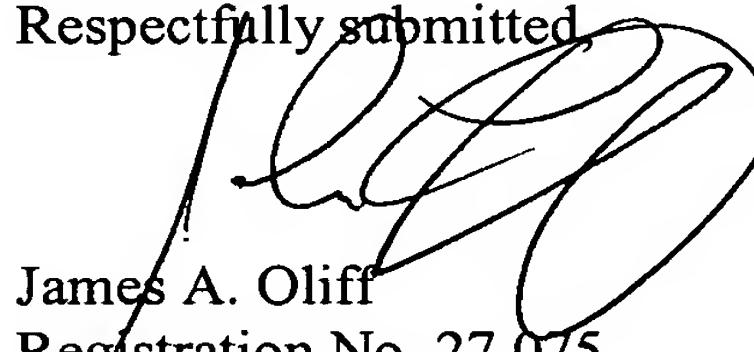
Applicants assert that none of the applied references, whether considered alone or in combination, disclose or suggest each and every feature recited in new claims 30 and/or 31. For example, the combination of applied references does not disclose or suggest a gas sensor element as set forth in claim 11, wherein a portion of the gases which enters the gas cavity and reaches the oxygen monitor cell through the first and second chambers and a portion of the gases which enters the gas cavity and reaches the gas sensor through the first and second chambers undergo the same total diffusion resistance, as recited in new claim 30, or the similar features as recited in new claim 31.

III. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 2-7, 10-13 and 15-31 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,


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